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**MicroRNAs as regulators of differentiation and cell fate decisions.**

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**Public Summary:**

MicroRNAs are short strands of RNA that regulate gene expression. Particular microRNAs each have unique expression domains, targets, and gain- and loss-of-function phenotypes that have important implications for directed differentiation of stem cell populations and suppression of undesired cell types. We discuss this emerging topic, in part using muscle differentiation as a paradigm, and highlight common themes and unique modalities by which microRNAs exert their lineage-promoting or differentiation effects on multiple tissues.

**Scientific Abstract:**

Unique expression domains, targets, and gain- and loss-of-function phenotypes of particular microRNAs have important implications for directed differentiation of stem cell populations and suppression of undesired cell types. We discuss this emerging topic, in part using muscle differentiation as a paradigm, and highlight common themes and unique modalities by which microRNAs exert their lineage-promoting or differentiation effects on multiple tissues.

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